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ANNUAL REPORT

OF THE

DUMRAON EXPERIMENTAL FARM

FOR

1894-95.

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ANNUAL REPORT OF THE DUMRAON EXPERIMENTAL FARM FOR 1894-95.

(1) *Brief description.*—The Dumraon Experimental Farm was established by the late Maharaja of Dumraon in 1885. The expenditure incurred in its maintenance is met by the Dumraon Raj. Babu Ganga Sahai Misser, who had served as an apprentice at the Cawnpur Farm, has been in charge of the actual working of the Farm subject to the supervision of the Assistant Director. The Farm comprises three blocks, one of which is situated at Parswana about two miles to the west of the Dumraon town, another a Bhojpur about two miles north of Dumraon, and the third is at Dumraon itself and lies on both sides of the railway line.

The Parswana fields, about 15 acres in extent, have hitherto formed the main portion of the experimental farm. The soil of these lands is a heavy clay, ordinarily cultivated with paddy, wheat, pulses, and sugarcane. It has all the faults of a heavy clay soil, being impervious to water and difficult to work. The country plough fails to penetrate it beyond a depth of three inches, and the soil, when wet, invariably bakes into hard clods on exposure to the sun, thus rendering it difficult to secure a good tilth for sowing. The soil is mixed with a small proportion of *kankar*, mainly nodules of silicate of lime. On chemical analysis, it was found to be extremely deficient in respect of combined nitrogen (·06 per cent. of ammonia); it is also somewhat deficient in phosphoric acid (·10 per cent.) and lime (·82 per cent.), but is rich in potash (nearly 1½ per cent.). The Parswana land is typical of an extensive tract of land lying to the west of the Bhojpur Distributary of the Western Sone Canals, and stretching southward from the railway line. The farm is, as a rule, irrigated with canal water; it is also provided with a masonry well which supplies water in the event of canal water being not at hand.

The land at Bhojpur, one and-a-half acres in area, was appropriated for experimental purposes in 1886. The soil is a deep loam suited to the cultivation of *bhadoi* crops, potatoes and other vegetable crops. The chemical composition of this soil is not known. The land is irrigated from a masonry well.

The land at Dumraon is divided by the railway line into two pieces, having an aggregate area of 50¾ local bighas or about 30¾ acres. It was added to the farm during the year under report. The soil is a light loam resting on a clay subsoil. Samples of this soil have been submitted to Dr. Leather, Agricultural Chemist to the Government of India, for analysis. The land is provided with an irrigation channel from the Bhojpur Distributary, and one or two wells are to be constructed for irrigating such crops as require frequent irrigation.

The land at Parswana was considered by Dr. Leather to be unsuitable for experimental purposes. The land newly taken up at Dumraon was selected by him with a view to gradually transfer there the experimental work hitherto carried on at Parswana. The Bhojpur land has been also abandoned in the current year, as its soil is nearly of the same description as that of the land at Dumraon, and there is therefore no special object in retaining it any longer.

(2) *Meteorology of the year.*—The following table shows the amount and distribution of rainfall during the year under report :—

Months.	Rainfall.		Number of rainy days.	
	Normal.	1894-95.	Normal.	1894-95.
1	2	3	4	5
April 1894 ...	0·17	...	0·40	...
May ,, ...	1·03	·65	2·15	1
June ,, ...	4·96	8·82	7·55	8
July ,, ...	11·07	13·47	14·50	18
August ,, ...	10·22	15·64	12·60	16
September ,, ...	7·19	9·74	9·20	13
October ,, ...	3·35	3·51	3·00	7
November ,, ...	0·17	8·15	0·35	2
December ,, ...	0·23	...	0·45	...
January 1895 ...	0·79	0·84	1·80	2
February ,, ...	0·36	·22	1·10	1
March ,, ...	0·2?	...	0·85	...

The figures of actual rainfall and the number of rainy days were those recorded at the Dumraon Farm; the normal figures are taken from the returns of Buxar, the nearest rain-recording station to Dumraon.

Last season was characterised by an excess of rainfall during the monsoon period, and the prolongation of the rains till ehtfirst week of

November. The monsoon set in in the first half of June, and although the rainfall was excessive, it was well distributed throughout the rainy season and proved exceedingly beneficial to the winter paddy crop. On the other hand, the excessive rainfall interfered with the preliminary cultivation for the *rabi* crops. The sowing of *rabi* was retarded by a heavy fall of rain on the 4th of November, which did not allow of wheat being sown till the end of the month after the sowing season had almost passed away. The late sowing caused a general low outturn of wheat throughout the district. In January and February, the sky was frequently overcast with clouds, which encouraged the spread of rust in the wheat crop. The crop also suffered from the prevalence of dry hot west winds which set in in March and prevented the grain from filling in properly. The season thus proved to be altogether unfavourable to the wheat crop.

(3) *Operations during the year.*—The operations during the year fall under the following heads :—

(i) Experiments in manures.
(ii) Experiments in methods of cultivation.
(iii) Experiments in crops and new varieties of existing crops.
(iv) Trials of new agricultural appliances.
(v) Conservation of cattle manure.
(vi) Distribution of seeds.

All the experiments with one exception were carried on as in previous years, on the Parswana block; the exception was an experiment with *aus* paddy at Bhojpur.

(*i*) *Experiments in manures.*

These were intended to ascertain the value (1) of bone-manure for winter paddy and *khesari*, (2) of bone-manure with and without the addition of crude saltpetre for wheat, and (3) of crude saltpetre alone for wheat. All these experiments are *permanent*, and will be continued for some years.

Bonemeal on paddy and khesari.

The experiment first named was made in six plots of land, each 800 square yards in area, three of which were manured with bonemeal at the rate of 6 maunds per acre, and the remaining three received no manure. The experiments were commenced in the year 1893-94 when bone-manure was applied in the form of ashes. Last year, under Dr. Leather's advice, bonemeal was used instead of ashes. The six plots first bore a crop of winter paddy and then a crop of *khesari* in the *rabi* season. All the plots were ploughed five times and harrowed twice and otherwise received the same treatment except with reference to the manuring. The seeds of paddy and *khesari* used in the experiment were of the ordinary varieties grown in the neighbourhood. The plots were transplanted with paddy seedlings on the 13th August, and the crop was harvested on the 27th November. *Khesari* was simply scattered among the standing paddy crop in the third week of October, and was harvested in the second week of March.

The following statements exhibit the outturns of paddy and *khesari* in each of the six plots under experiment. The results obtained in the preceding year are also quoted for the sake of comparison:—

Statement showing the outturn per acre of paddy, grain, and straw in the experiment with bone-manure.

Number of plots.	Area in square yards.	SPECIAL TREATMENT.	1893-94.		1894-95.	
			Grain.	Straw.	Grain.	Straw.
1	2	3	4	5	6	7
			lbs.	lbs.	lbs.	lbs.
13	800	Bone-manure at 6 maunds per acre...	806	1,474	837	1,668
15	800		831	1,424	827	1,125
17	800		793	1,474	855	1,122
		Average outturn ..	810	1,457	839	1,305
14	800	Nil	819	1,449	1,333	2,849
16	800		793	1,363	840	1,531
18	800		855	1,351	883	1,665
		Average outturn ...	822	1,387	1,018	2,015

Statement showing the outturn of khesari, grain, and straw in the experiment with bone-manure.

Number of plots.	Area in square yards.	SPECIAL TREATMENT.	1893-94.		1894-95.	
			Grain.	Straw.	Grain.	Straw.
1	2	3	4	5	6	7
			lbs.	lbs.	lbs.	lbs.
13	800	.....	1,240	1,363	1,117	1,257
15	800		1,134	1,153	1,073	1,240
17	800		905	967	1,101	1,411
		Average outturn ...	1,093	1,161	1,097	1,302
14	800	.....	1,166	1,214	1,382	1,819
16	800		1,066	1,104	1,364	1,759
18	800		892	930	1,365	1,812
		Average outturn ...	1,041	1,082	1,370	1,797

It will appear, that bone-manure has not the slightest effect in increasing the outturn of paddy. On the other hand, the experiment shows that the use of bones applied on a stiff clay soil tends to diminish the yield. In both the year, the outturn of paddy from the unmanured plots was higher than the plots manured with bones. The outturn of *khesari* from the manured plots was slightly in excess of the outturn from the unmanured plots in the first year of experiment (1893-94), but in the year under report, the plots manured with bones gave a smaller yield than those which received no manure.

(2) Bonemeal and saltpetre on wheat.

The manurial experiment was designed to test the effect of bonemeal with and without the addition of saltpetre on the wheat crop. The experiment was commenced in the year 1893-94, and in that year the wheat was almost destroyed by rust. The experiment was made in five equal plots of land, each 800 square yards in area, two of which were manured with bonemeal at the rate of 6 maunds per acre, two with bonemeal at the above rate with the addition of 3 maunds of saltpetre per acre; the fifth plot was left without any manure. Local soft white wheat was used in the experiment and was sown at the rate of 1 maund 15 seers per acre. On account of the late continuance of rain last year, the seed could not be sown till the last week of November, almost a month later than the usual time of sowing. The plots received four ploughings, two harrowings, and one watering. Bonemeal was applied seven weeks before sowing, and crude saltpetre was applied as a top-dressing or immediately before irrigation when the plants attained a height of about 8 inches. The crop was harvested in the first week of April. It was much damaged by unfavourable weather and rust which also appeared last year. Results of the experiments are tabulated below:—

Statement showing outturn per acre of wheat in the experiment with bonemeal.

Number of plots.	Area in square yards.	SPECIAL TREATMENT.	1894-95.	
			Grain.	Straw.
1	2	3	4	5
			lbs.	lbs.
27	800	Bonemeal at 6 maunds per acre and crude saltpetre at 3 maunds per acre.	523	880
29	800		544	927
		Average ...	533	903
28	800	Bonemeal at 6 maunds per acre	394	692
30	800		390	682
		Average ...	392	687
31	800	No manure	402	701

For the reasons given above, the outturn of grain and straw in every one of the five plots under experiment was very poor; but on comparing the yields, it would appear that as in the experiment with paddy and *khesari*, the outturn in the two plots manured with bonemeal alone was slightly smaller than that of the two unmanured plots. The two plots manured with bone-manure and saltpetre gave, however, the highest outturn, in consequence, no doubt, of the beneficial influence of saltpetre.

(3) Saltpetre on wheat.

The action of saltpetre on the wheat crop was more clearly borne out by the third manure experiment noted above. It was designed to test the usefulness of saltpetre applied as a top-dressing to wheat at the rate of 3 maunds per acre.

It was made in four plots of land, each measuring 800 square yards, two of which were manured with crude saltpetre and two left unmanured. The plots were rather treated in the same as those in the second manure experiment described above. The results obtained are shown in the following statement:—

Statement showing outturn per acre of wheat grain and straw in the experiment with crude saltpetre.

Number of plots.	Area in square yards.	SPECIAL TREATMENT.	1894-95.	
			Grain.	Straw.
1	2	3	4	5
			lbs.	lbs.
32	800	Crude saltpetre at 3 maunds per acre.	582	1,073
34	800		608	1,147
		Average outturn ...	595	1,110
33	800	Nil	397	698
35	800		399	703
		Average outturn ...	398	701

Crude saltpetre would appear to have considerably increased the yield of both grain and straw. This result is confirmatory of the experience gained from experiments made previously on the Dumraon farm (*vide* page 4 of printed note on the "Dumraon farms: what they teach)."

(ii) *Experiments in methods of cultivation.*

Deep *versus* shallow ploughing.

There are two experiments, both permanent, under this head, designed to contrast deep with shallow ploughing, (1) for winter paddy and *khesari*, and (2) for wheat. In both these experiments, the deep ploughing is effected by means of two Sibpur soil-inverting iron ploughs, one following immediately in the furrows made by another, and the shallow ploughing by the country plough in the usual manner.

(1) Paddy.

The experiment with paddy and *khesari* was commenced in 1893-94 in 12 plots of land, six of which were under deep and the other six under shallow cultivation In the first year, the plots under deep cultivation were ploughed twice with a Sibpur plough followed in the same furrow by a country plough; but at the suggestion of Dr. Leather two Sibpur ploughs, one following in the furrow of the other, were used instead, during the year under report, and two such ploughings were given to the plots under deep cultivation. The plots under shallow cultivation were ploughed as many times as were required to produce the necessary tilth. The depth of ploughing was 5 inches in case of deep cultivation and 3 inches in case of shallow cultivation. In 1893-94, all the plots were manured with cowdung at the rate of 180 maunds per acre, but in compliance with the suggestion from Dr. Leather, it was reduced to 100 maunds. During the year

under report, all the 12 plots were transplanted, while in the preceding year, they had been sown broadcast. Again, in 1893-94 all the 12 plots carried a crop of *khesari* after paddy, while last year all the six plots, namely, three under deep and three under shallow cultivation, were sown with *khesari* in addition to paddy, and the remaining six plots carried only one crop, namely paddy. All the 12 plots were cultivated in the same way as in the manure experiment with paddy described above. The following statements show the outturn per acre of paddy and *khesari* in the two years since the commencement of the experiment:—

Statement showing the outturn per acre of paddy and straw in the experiment in deep versus *shallow cultivation.*

Number of plots.	Area in square yards.	SPECIAL TREATMENT.	1893-94.		1894-95.	
			Grain.	Straw.	Grain.	Straw.
1	2	3	4	5	6	7
			lbs.	lbs.	lbs.	lbs.
1	800	Deep ploughing	1,202	1,984	1,308	1,581
3	800		1,128	2,009	1,292	1,958
6	800		1,215	2,480	1,206	1,544
8	800		1,190	2,281	1,187	2,741
9	800		1,163	2,255	1,636	3,240
11	800		1,165	1,969	1,906	2,855
		Average outturn ...	1,175	2,163	1,372	2,319
2	800	Shallow ploughing	892	1,736	1,119	2,142
4	800		954	1,611	1,069	1,745
5	800		880	1,513	1,615	3,028
7	800		892	1,660	1,630	3,249
10	800		756	1,338	1,088	1,681
12	800		806	1,611	1,085	1,801
		Average outturn ...	863	1,578	1,267	2,274

Statement showing the outturn per acre of khesari grain and straw in the experiment in deep versus *shallow cultivation.*

Number of plots.	Area in square yards.	SPECIAL TREATMENT.	1893-94.		1894-95.	
			Grain.	Straw.	Grain.	Straw.
1	2	3	4	5	6	7
			lbs.	lbs.	lbs.	lbs.
1	800	Deep cultivation	1,216	1,240	1,780	1,992
3	800		1,079	1,116	1,753	2,008
6	800		1,091	1,128	1,773	1,899
		Average outturn ...	1,129	1,161	1,768	1,966
2	800	Shallow cultivation	1,196	1,215	1,576	1,777
4	800		1,176	1,228	1,576	1,803
5	800		1,128	1,153	1,553	1,828
		Average outturn ...	1,167	1,199	1,568	1,803

Ploughing to the depth of five inches appears to have caused a larger yield of both paddy and *khesari* than the comparatively shallow ploughing to the depth of three inches in both the years in which the experiment has been made.

(2) Wheat.

The experiment in deep *versus* shallow ploughing for wheat was commenced in 1893-94, when, however, the crop was almost totally destroyed by rust. The experiment was repeated during the year under report. It was made in four plots of land, each 1,600 square yards, two of which were under deep and two under shallow ploughing. The deep ploughed plots were ploughed once in July to the depth of six inches with two Sibpur ploughs, one following immediately in the furrows of the other. Owing to continued and excessive rainfall during the last monsoon, they could not be ploughed again till the sowing time, when they received one more ploughing with only one Sibpur plough. The two plots under shallow cultivation were ploughed twice with a country plough, namely, once in July, and twice in November at the time of sowing. The depth attained by the country plough was only three inches.

All the four plots were manured with cowdung at the rate of 100 maunds per acre, the time of sowing and the subsequent treatment of the plots were the same as in the manure experiment with wheat already described. The statement below shows the produce of grain and straw per acre from the deep and shallow ploughed plots in 1894-95 :—

Statement showing the outturn per acre of wheat grain, and straw in the experiment in deep versus shallow ploughing.

Number of plots.	Area in square yards.	Special treatment.	1894-95.	
			Grain.	Straw.
1	2	3	4	5
			lbs.	lbs.
36	1,600	Deep ploughing 6" with Sibpur plough	565	1,029
39	1,600		574	1,036
		Average ...	569	1,032
37	1,600	Shallow ploughing 3" with country plough.	506	930
38	1,600		495	922
		Average ...	500	926

The low outturn was the result of late sowing and the attack of rust. A comparison of the yields of the four plots shows, however, a distinct increase obtained by deep ploughing.

In case of deeper ploughing, the net profit was Rs. 4-2-7½ per acre in excess of that obtained from shallow ploughing. The above results fully confirm the experience previously gained at the farm.

(iii) *Experiments with new crops and new varieties of existing crops.*

Muzaffarnagar wheat and *aus* paddy.

The new crops and varieties tried during the year were (1) Muzaffarnagar wheat, and (2) *aus* paddy. The latter is a crop new to the district. The experiment with Muzaffarnagar wheat is permanent, while that with *aus* paddy is of a temporary nature.

Muzaffarnagar wheat was tried on the farm against two local varieties, namely, (1) the white, popularly known as Buxar white or Club No. 1, and (2) the red. Muzaffarnagar wheat is a soft, white variety, well known in the market and having a reputation equal to Buxar white. It had been tried against the local white and red varieties in previous years, and found to give a larger outturn than the two latter, although after cultivation for two or three years it showed evident marks of deterioration both as regards quality and productive powers (*vide* pages 6 and 7 of the note on "Dumraon farms: what they teach"). This defect, however, could be easily remedied by periodical importation of new seed. The experiment made last year was meant to test the adaptability of Muzaffarnagar wheat to the soil and climate of Shahabad. The experiment was conducted in six equal plots of land, each 400 square yards, two of which were sown with Muzaffarnagar wheat, two with Buxar white, and two with the local red variety. All the six plots were manured with cow-dung at the rate of 100 maunds per acre; and the plots were treated is respect of cultivation, sowing, irrigation, and harvesting, in the same way as in the experiments with wheat described in the preceding pages. The results of the experiment are shown below:—

Statement showing the produce per acre of wheat in the experiment with Muzaffarnagar wheat.

Number of plots.	Area in square yards.	Special treatment.	1894-95.	
			Grain	Straw.
1	2	3	4	5
			lbs.	lbs.
40	400	Muzaffarnagar wheat (fresh seed) ...	696	1,273
43	400		726	1,295
		Average ...	711	1,284
41	400	Buxar white wheat	656	1,192
44	400		650	1,174
		Average ...	653	1,183
42	400	Local red wheat	644	1,137
45	400		641	1,159
		Average ...	643	1,148

The result was distinctly in favour of Muzaffarnagar wheat.

The experiment in the cultivation of *aus* paddy was initiated in 1893-94 at the request of Mr. F. H. B. Skrine, then Collector of Shahabad. It was meant to ascertain whether *aus* paddy—a dry land

crop—could be profitably cultivated in Bihar. In that year, it was grown on two plots of land at Bhojpur, but the outturn was exceedingly poor, being 200 pounds per acre in one plot and 237 pounds of grain per acre in the other. During the year under report, the crop was also raised in the same two plots, one sown with seed saved from the previous year's produce, and the other with seed newly obtained from the Hooghly district. The outturn, though not satisfactory, was considerably in excess of that obtained in 1893-94, as will be seen from the statement given below:—

Statement showing the outturn per acre of aus *paddy.*

Number of plots.	Area in square yards.	Special treatment.	1893-94.		1894-95.	
			Grain.	Straw.	Grain.	Straw.
1	2	3	4	5	6	7
Bhojpur land 1 ...	400	Nil	lbs. 200	lbs. ...	lbs. 726	lbs. 2,166
... 2	400	Nil	236	...	880	2,523

The experiment will be continued on the field now taken up at Dumraon.

(iv) *Trials of new agricultural appliances.*

The appliances tried during the year were (1) an iron thresher newly invented by Messrs. Thomson and Mylne of Behea, and (2) the cross-hill clod crusher. The iron thresher was compared with the country system of threshing in two experiments, one with winter paddy and the other with wheat. In threshing paddy, the iron thresher took a much longer time than the country method, and failed to thresh out all the corn. With wheat, it was more successful, having threshed out a larger quantity of corn from a given quantity of wheat in straw than the country system of threshing. On the other hand, the chaff made by the iron thresher lacked in softness, and was consequently of a coarser quality than chaff made by the bullock's feet.

The cross-hill clod crusher was again tried during the year under report and found very useful in reducing hard clods, which invariably form on the heavy clay soil of the experimental field at Parswana.

(v) *Conservation of cattle manure.*

This subject receives much attention at the Dumraon farm, as well as in the two other experimental farms in Bengal. The farm cattle are kept in an enclosure, one side of which is occupied by a long shed, the floor of which is paved with bricks. The urine of the cattle as well as washings of the cattle shed run along a gutter into a small pit from which the liquid is bailed out and then thrown into the manure pit. During the hot weather, the cattle remain at night in the open yard, and much of the urine is thus unavoidably lost. The excrements of the cattle, both solid and liquid, are thrown into the manure pits, one pit being used at a time. The pits are dug in a stiff lay soil which permits of very little wastage by filtration. Once a

week, the contents of the pit are pressed down with the feet in order to prevent excessive loss of moisture by evaporation. The pits are covered over with a *kutcha* thatch to prevent the sun and rain penetrating into the manure.

The system of conserving cattle manure in the manner described was approved by Dr. Leather, Agricultural Chemist to the Government of India. The advantages possessed by it are many and obvious. Much of the urine of the cattle, which, in fact, is more valuable from a manurial point of view than the dung, is saved, being kept under cover. The manure loses nothing by washing with rain water, while it is also protected from drying too quickly under the powerful influence of the sun. Loss by filtration is also prevented, to a great extent, by the clay in which the pits are made. The frequent pressing down of the manure prevents rapid evaporation, and the loss of nitrogen in the form of ammonia. In fact, not the faintest smell of ammonia is perceptible near the pits.

At the suggestion of Dr. Leather, a weighment was made of the dung produced by the farm cattle. An accurate record of the food given to the cattle was also kept. The data obtained were as follows:—

Number of bullocks			14
Number of days on which dung was collected (18th June 1894 to 15th October 1894) ...			120
Average number of hours daily the cattle were kept in			17
Total quantity of food given—			
	Mds.	Srs.	Ch.
Straw	274	15	2
Oil-cake	20	33	0
Salt	0	17	6
	295	25	6
Deduct food rejected	12	5	4
Net food	283	20	2
Weight of dung and urine thrown in, weighed raw	608	23	4
Weight of dung and urine thrown in, weighed 245 days after the pit was closed	419	24	0

On these data, the average annual produce of manure per head of bullock would amount to about 91 maunds weighed eight months after the pit was closed.

(vi) *Distribution of seeds.*

Distribution of Muzaffarnagar seed wheat.

The wheat crop in the Shahabad district sustained an almost total failure in the season 1893-94, owing to a severe attack of rust. The grain was specially defective in quality, and was scarcely fit for use as seed. I therefore suggested, that a large quantity of the seed of Muzaffarnagar soft, white wheat which had been found by experiments in the Dumraon farm to be of as good quality as Buxar wheat No. 1 and to be even more productive, should be imported from the North-

Western Provinces and distributed among tenants of the Dumraon Raj. The suggestion was supported by Mr. C. A. Oldham, the Subdivisional Officer of Buxar, and the Diwan of the Dumraon Raj, Rai Jai Prakas Lal Bahadur, C.I.E. A meeting called by the Diwan was held on the 16th August 1894, under the presidency of Mr. Oldham, and was attended by a large number of raiyats, and it was decided to import 250 maunds of selected Muzaffarnagar seed wheat for sale at cost price among the tenants. The Overseer of the experimental farm was sent to Muzaffarnagar to select and purchase the seed. This Department contributed Rs. 200 towards the cost of importing the seed. On arrival, it was distributed to some 300 tenants of the Dumraon Raj in different parts of the Shahabad district. The Raj tahsildars were requested to keep accurate registers of the cultivation by each raiyat to whom seed had been sold. In consequence of the unusual prolongation of the rains last year, the crop could not be sown in most places till late in November, that is, three weeks to a month later than the usual time of sowing. The crop was almost destroyed in those places where it had been sown before the exceptionally heavy rainfall of the 4th November 1894. The wheat crop of the district was further damaged by rust, which, however, did less injury to the Muzaffarnagar variety than to the varieties locally grown. Owing to these causes, the outturn was generally low, but it is reported that the yield of Muzaffarnagar wheat was generally heavier than that of the local varieties, and it was also better in quality.

The variety seems to have taken the fancy of the cultivators, many of whom have expressed the desire to grow it again in the next season.

Distribution of Naini Tal seed-potatoes.

A similar attempt to introduce the cultivation of Naini Tal potatoes met with the most satisfactory result. It had been found by experiments for a number of years in the Dumraon farm, that the hill varieties of potatoes gave a larger yield than the local varieties, of which the seed is annually imported from Bettiah, Gazipur, and other places in the plains. Fourteen maunds of Naini Tal seed potatoes were supplied last year to the Raj, and were distributed in small quantities to a number of market gardeners at Bhojpur, Dumraon, and a few other villages. The sowing was much retarded in consequence of heavy rainfall in November; nevertheless the Naini Tal potatoes gave a much larger yield in almost every case than the local varieties planted alongside for comparison.

(4) *Expenditure and Receipts.*—The gross expenditure of the Dumraon farm, including the maintenance of the Economic Museum, amounted to Rs. 2,628-4-3, against Rs. 1,721 5-1. The excess of expenditure was due to the cultivation and fencing of the land newly taken. The receipts of the farm amounted to Rs. 677-3-2, against Rs. 400-13-8 in the previous year.

CALCUTTA,
The 7th September 1895.

N. N. BANERJEI,
for B. C. BASU,
Assistant Director of Land Records and Agriculture, Bengal.

H. P.—Reg. No. 2348J—600—27-9-95.